**Supplementary Table 1:** Volume of the postero-medial and antero-lateral leg muscles during and after bed-rest: per-protocol analysis

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| **Group** | **Study-time** |
| BDC(cm3) | HDT27/28(%) | HDT55/56(%) | R+14(%) | R+90(%) | R+180(%) |
| *Flexor digitorum longus (study-time×group: p=0.001; A,b)* |
| CTR | 31.6(3.1) | -11.3(7.8)%‡ | -15.7(9.0)%‡ | -9.2(7.0)%† | -0.7(5.6)% | 1.3(6.5)% |
| RE | 29.3(8.3) | 1.7(5.0)% | 1.3(8.8)% | 3.0(9.1)% | 0.7(4.0)% | 2.6(6.7)% |
| RVE | 24.7(8.1) | 2.8(10.0)% | -2.7(10.1)% | -0.4(10.2)% | 1.1(7.5)% | -0.6(8.8)% |
| *Flexor hallucis longus (study-time×group: p<0.001; A,b)* |
| CTR | 86.5(7.5) | -10.7(3.6)%‡ | -17.4(7.9)%‡ | -11.4(7.6)%‡ | 6.9(5.7)%† | 0.6(6.2)% |
| RE | 82.1(26.3) | 2.7(4.6)% | -3.0(5.6)% | -7.1(5.4)%† | -0.5(2.3)% | 1.6(4.6)% |
| RVE | 75.3(11.9) | 0.3(13.7)% | -6.1(15.0)% | -9.7(9.5)%\* | -4.9(9.7)% | 8.2(12.6)% |
| *Tibialis posterior (study-time×group: p<0.001; A,B)* |
| CTR | 118.5(16.8) | -13.1(4.1)%‡ | -16.5(5.5)%‡ | -5.0(7.4)% | -1.8(5.0)% | -0.1(3.3)% |
| RE | 100.9(20.2) | 0.5(3.7)% | -2.2(5.1)% | 1.3(4.1)% | 1.8(2.9)% | 0.3(2.8)% |
| RVE | 108.9(23.7) | -2.5(8.6)% | -3.5(9.9)% | 1.3(8.4)% | -1.5(8.2)% | 0.2(10.3)% |
| *Lateral gastrocnemius (study-time×group: p=0.003; a,B)* |
| CTR | 188.1(29.2) | -12.4(10.6)%† | -20.4(11.4)%‡ | -14.4(9.7)%‡ | -3.1(8.4)% | -2.7(7.7)% |
| RE | 195.8(34.1) | -2.7(8.4)% | -2.9(7.5)% | 1.5(9.6)% | 0.4(7.9)% | -3.7(7.3)% |
| RVE | 164.9(32.5) | 2.8(7.9)% | 0.8(8.0)% | 1.0(9.5)% | 3.5(9.1)% | 1.6(11.9)% |
| *Medial gastrocnemius (study-time×group: p=0.002; A,B)* |
| CTR | 304.8(50.2) | -16.5(7.8)%‡ | -24.5(9.5)%‡ | -9.6(6.8)%† | 1.7(3.0)% | 1.7(5.4)% |
| RE | 301.8(35.6) | -4.2(7.5)% | -7.9(5.9)%† | -2.9(4.7)% | 1.0(4.7)% | -2.5(4.6)% |
| RVE | 259.2(34.8) | -3.8(4.3)% | -8.4(6.8)%† | 1.1(7.0)% | 2.4(8.6)% | -1.2(7.9)% |
| *Soleus (study-time×group: p=0.001; A,b)* |
| CTR | 574.8(87.9) | -17.2(8.0)%‡ | -23.2(10.1)%‡ | -8.8(7.3)%† | -1.7(4.4)% | -2.4(4.5)% |
| RE | 527.0(96.2) | -7.3(3.8)%‡ | -12.7(4.7)%‡ | -4.8(2.9)%† | 1.2(2.1)% | 1.0(4.3)% |
| RVE | 563.0(57.6) | -8.2(6.2)%† | -14.8(7.6)%‡ | -5.3(5.7)%\* | 0.0(6.0)% | -1.9(6.4)% |
| *Extensor digitorum longus*  |
| CTR | 122.0(18.4) | -3.4(3.7)%\* | -5.8(4.1)%† | -2.8(4.8)% | -2.3(4.0)% | -2.6(3.9)% |
| RE | 113.8(14.1) | -2.2(3.9)% | -4.2(3.2)%† | -1.5(5.6)% | 0.5(4.5)% | 1.0(2.8)% |
| RVE | 109.3(14.2) | 0.1(5.0)% | -3.7(5.4)% | -1.5(6.7)% | -0.2(6.7)% | -0.8(8.0)% |
| *Tibialis anterior*  |
| CTR | 166.8(19.7) | -7.7(3.5)%‡ | -12.2(3.6)%‡ | -5.3(4.4)%† | -0.5(2.5)% | -1.4(2.4)% |
| RE | 159.6(32.6) | -6.8(4.1)%‡ | -10.9(3.2)%‡ | -1.4(5.9)% | -0.1(3.8)% | 0.4(4.1)% |
| RVE | 141.7(15.8) | -5.5(6.4)% | -8.3(9.3)%\* | -1.6(6.2)% | 1.9(4.7)% | 0.3(4.7)% |
| *Peroneals*  |
| CTR | 155.3(27.6) | -11.4(5.7)%‡ | -16.5(8.6)%‡ | -9.6(5.0)%‡ | -1.9(3.5)% | -0.8(5.1)% |
| RE | 143.8(9.5) | -4.3(3.0)%† | -8.2(3.6)%‡ | -0.7(3.5)% | 0.3(3.6)% | 1.6(2.7)% |
| RVE | 138.3(19.0) | -5.5(3.9)%† | -9.2(6.7)%† | -3.5(4.6)% | -0.3(6.4)% | 0.3(4.2)% |
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\*: *p*<0.05; †: *p*<0.01; ‡: *p*<0.001 and indicate significance of difference to baseline value. CTR: inactive control group, RE: resistive exercise only group, RVE: resistive exercise with whole-body vibration group. *P*-value from three-group AVOVA is presented. "A" or "B" (*p*<0.01) and "a" or "b" (*p*<0.05) refer to differences on two-group AVOVA for CTR vs. RE or CTR vs. RVE. All p-values adjusted for false positives via the “false discovery rate” method.